

16.

Acute Hemorrhagic Gastro-enteritis in a Giant Panda.

LEONARD J. GOSS

Veterinarian, New York Zoological Park

The male giant panda, *Ailuropoda melanoleuca* (Daudin), in the collection of the New York Zoological Park, was found dead in its cage on the morning of May 6. In view of the comparative rarity of the animal in captivity and the paucity of records as to its pathology, we present here an account of its diet and the findings on autopsy.

The specimen was reported to be 14 months old when it was received on May 1, 1939, from China through the agency of Mr. Dean Sage, Jr. Its weight on arrival was 72 pounds. Its age when captured could not be learned, but it had been in captivity in China for some months, apparently confined by a chain or rope around its neck, for the hair was worn off in this area in a wide band, and the coat was generally in a dry, unhealthy condition. The type and amount of food supplied the animal in China and en route to New York could not be learned.

For eleven months previous to the arrival of the male, the female giant panda in our collection (8 months old on arrival) had been fed the following ration devised by Dr. C. R. Schroeder: Pabulum, dried milk, raw eggs, raw green vegetables (carrots, lettuce, celery), oranges, codliver oil, brewers' yeast, bone meal and salt. The male specimen was put on this diet and readily consumed it.

During the twelve months the male was in the Zoological Park it made an average monthly weight increase of 8.1 pounds. However, 23 pounds were gained during the first 16 days and only 20 pounds were gained the last 4 months. This is in contrast to an average monthly gain of 9.5 pounds by our other panda, the female, for the 24 months she has been in captivity. Her average gain for the past 6 months is exactly the same as her two-year average, 9.5 pounds per month.

From time to time during the year that the male was in our collection, bamboo, sugar cane and cornstalks were introduced into the diet and both the male and the female consumed this stalky material with evident enjoyment. Eventually the source of supply became less dependable and the stalks were discontinued.

It soon became apparent that the male giant panda was not making satisfactory progress and the diet was suspected of being faulty. At intervals of about two months it ceased to feed for several days at a time and these periods were accompanied by frequent belching-like actions. Accompanying these attacks, quantities of yellow, tenacious, rubbery mucus streaked with blood were passed from the rectum. After each of these attacks the animal's appetite was impaired to such an extent that it would eat only a portion of some of the usual items in its diet—food that it had taken willingly before. As these digestive disturbances progressed, anal flatus was a marked symptom.

The stool was always very loose, being about the consistency and appearance of corn meal mush, and a formed stool was never passed. While this was to be expected, considering the elements of the diet, it was not felt that this was a satisfactory condition. In view of the well-developed denture of the panda, the large stomach, the consistency of the stool and the attacks of intestinal disturbances, it was decided that the animal should again be given roughage in the form of bamboo.

A small stalk of bamboo $\frac{1}{2}$ " in diameter and 8" long was offered. This aroused such interest in an otherwise lethargic animal and the results were so gratifying that the practice was continued. A small stalk of bamboo was given each day. Invariably the bamboo was stripped of its outside covering by the use of a paw and the teeth and the remaining stalk crushed and chewed in the powerful teeth and jaws. Small portions of the bamboo were fed daily and the results anxiously awaited. The appetite seemed improved, at least for the bamboo; the stool became formed, and the anal flatus desisted. Feeling that no untoward dangers were developing and that the animal was now conditioned to the bamboo, we increased the amount. At no time were more than three sticks 8" long fed the animal. Two and a half weeks following the introduction of bamboo into the diet, the panda developed a fatal enteritis. The morning before it died, it was found prostrated and breathing hard, the coat damp over the entire body. Close examination revealed the skin to be dry; it was assumed that the moisture on the coat was a result of lying in the animal's own fecal material. There was a spot of vomitus in the cage, consisting of the previous evening's meal, and a normal stool. The eyes were closed, the conjunctiva congested, in marked contrast to a very pale oral mucosa. A very watery, reddish-brown (blood) stool was passed, accompanied by griping. A diagnosis of acute enteritis was made. At 1 P.M. the animal appeared much brighter and was not adverse to moving about. At 7 P.M. it was up and around, steady on its feet and begging for food. Food was withheld and 1 pint of water was given per orum. It was felt that the crisis had passed and recovery was probable, but the animal was found dead at 7:30 A.M. the following morning.

Autopsy findings were: Body weight 170 pounds, about two quarts of clear watery transudate in the abdominal cavity. The mesenteric vessels were tremendously engorged. The serosa of the intestines was purple red in color, the mesenteric lymph glands swollen, hemorrhagic at the periphery and juicy. The intestines contained several quarts of blood-colored material containing small flakes of curd-like mucus. The gastric and intestinal mucosa were acutely hemorrhagic in color. The intestinal wall was thickened. The gastric and duodenal mucosa showed numerous small pits representing partially healed chronic ulcers. The spleen was pulpy and swollen. All other organs appeared normal. Bacterial cultures of the liver, spleen, and heart's blood were negative. Cultures of the intestinal content in tetrathionate broth and on brilliant green agar plates did not reveal any paratyphoid organisms. Death was attributed to an acute hemorrhagic gastro-enteritis. From the cultures made, bacterial infection is precluded. The part the bamboo in the diet played in producing death is problematical. It is thought that the alimentary tract was particularly susceptible to the abrasive action of bamboo in view of the fact that the animal had been on a soft diet up to 2 $\frac{1}{2}$ weeks before death. The ulcers found in the gastric and duodenal mucosa undoubtedly were contributing causes.